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PPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO	
10/028,548	12/19/2001	Dallas K. Pierson	10309US01 2468		
75	90 06/05/2003				
Steven J. Shumaker Shumaker & Sieffert, P.A. 8425 Seasons Parkway Suite 105 St. Paul, MN 55125			EXAMINER PHAM, HAI CHI		
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	DATE MAILED: 06/05/2003	DATE MAILED: 06/05/2003			

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary    Examiner	,		Application No.	Applicant(s)				
Hail C Pham   2861			10/028,548	PIERSON, DALLAS K.				
Period for Repty  A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.  Extransions of me may be available under the processor of 3 or R1 15(6), in no event, however, may a raphy be timely filed after 5X (6) MCNTHS from the realing date of this communication.  Extransions of me may be available under the processor of 3 or R1 15(6), in no event, however, may a raphy be timely filed after 5X (6) MCNTHS from the realing date of this communication.  It NO peardor for reply is specified above, the maximum studency period will apply and will apply at 5(6) MCNTHS from the mailing date of this communication.  Fallow to reply within the set or extended pends for raphy will, by datable, cause the application to become ARANDONED (63 U.5 £ 133).  Any reply recorded by the set of 50 CPR 1.704(b).  Status  1) Responsive to communication(s) filed on			Examiner	Art Unit				
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A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.  Extensions of time may be available under the processors of 37 CPR 1.35(a). In no event, however, may a reply be timely filed  if the pariod for reply specified above is lace than think (30) days, a reply which the stututory minimum of time (30) days will be considered timely.  if the pariod for reply specified above is lace than think (30) days, a reply which the stututory minimum of time (30) days will be considered timely.  If NO pariod for reply specified above is lace than think (30) days, a reply which the stututory minimum of the pariod for reply specified above is lace than the pariod for reply specified above is lace than the pariod for reply specified above is lace than the pariod for reply specified above is lace than the pariod for reply specified above is lace than the pariod for reply specified above is lace to the pariod for reply specified above is lace to the pariod for reply specified above is lace to the pariod for reply specified and the pariod for reply specified and pariod for reply specified at the pariod for r								
THE MAILING DATE OF THIS COMMUNICATION.  Extensions of time may be available under the provisions of 3 CFR 1.15(6). In no event, however, may a reply be timely filed after SX (6) MONTRIS from the mailing date of this communication.  If the period from the second and the communication of the communication of the second of the communication of the second of the communication.  Fallow to reply visition the eard or defined provided for reply will, by datafate, cause the application to become ARAHOONED (65 U.S. § 133).  Any reply received by the Official earth than from eminication provided upday the did early on the mailing date of this communication, even if timely filed, may reduce any example part of the communication, even if timely filed, may reduce any example plant turn registration is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11, 453 O.G. 213.  Disposition of Claims  4) Claim(s) 1-34 is/are pending in the application.  4a) Of the above claim(s) is/are withdrawn from consideration.  5) Claim(s) 1-34 is/are allowed.  6) Claim(s) 1-34 is/are allowed.  6) Claim(s) 1-35 is/are allowed.  6) Claim(s) 1-36 is/are allowed.  7) Claim(s) is/are objected to by the Examiner.  9) The precidication is objected to by the Examiner.  10) The drawing(s) filed on is/are: a) cocepted or b) objected to by the Examiner.  Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  11) The proposed drawing correction filed on is any community of the provided of the priority under 35 U.S.C. § 119(a)-(d) or (f).  2) All b) Some corrected drawings are required in reply to this Office action.  12) The eath or declaration is objected to by the Examiner.  Priority under 35 U.S.C. § 119 and 120  13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(e)-(d) or (f).  2) All b) Some corrected decided copies of the priority documents have been received in thi		• •	V IS SET TO EXPIRE 3 MONTH	'S) FROM				
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2a)  This action is FINAL. 2b)  This action is non-final.  3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11, 453 O.G. 213.  Disposition of Claims  4)  Claim(s) 1-34 is/are pending in the application.  4a) Of the above claim(s) is/are withdrawn from consideration.  5)  Claim(s) is/are allowed.  6)  Claim(s) is/are allowed.  6)  Claim(s) is/are rejected.  7)  Claim(s) are subject to restriction and/or election requirement.  Application Papers  9)  The specification is objected to by the Examiner.  10)  The drawing(s) filed on is/are: a  accepted or b  objected to by the Examiner.  Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  11)  The proposed drawing correction filed on is: a) approved b  disapproved by the Examiner.  If approved, corrected drawings are required in reply to this Office action.  12)  The oath or declaration is objected to by the Examiner.  Priority under 35 U.S.C. §§ 119 and 120  13)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  a)  All b  Some * c  None of:  1.  Certified copies of the priority documents have been received.  2.  Certified copies of the priority documents have been received in Application No  3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  *See the attached detailed Office action for a list of the certified copies not received.  14)  Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  a)  The translation of the foreign language provisional application has been received.  15)  Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.		S in the second section (a) Glad an						
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<sup>3</sup> Art Unit: 2861

## **DETAILED ACTION**

## Claim Rejections - 35 USC § 103

- 1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
  - (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
- 2. Claims 1-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yen et al. (U.S. 5,992,962) in view of Serra (U.S. 6,067,405) and Arce et al. (U.S. 6,493,112 B1).

Yen et al., an acknowledge prior art, discloses print masks for inkjet printers, the print masks having triangular patterns formed by open dots and solid black dots, the open dots corresponding to the nozzles being turned off while the solid black dots correspond to printed nozzles such that a multipass staggered-swath printing is performed. Although Yen et al. does not explicitly teach the open dots and solid black dots constituted set of first and second logical values, e.g. binary "1" and "0" values, and that the print mask being used in a laser printer, Yen et al. does however indicate that the print masks can be implemented as either a hardware or software driver to drive the print head, e.g., open or muffle the various nozzles. It is well known in the art that such software-driven print masks include a matrix set of logical values of "1" and "0" representing pixel grid as evidenced by Serra (Fig. 14). On the other hand, Arce et al. discloses a method and apparatus for producing halftone images using green-noise masks, wherein the mask is

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constituted by sets of binary values, and can be used in any specific printers, e.g., laser printer or inkjet printer.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to implement the print masks of Yen et al. to have binary values as taught by both Serra and Arce et al. The motivation for doing so would have been to provide the print mask as a software driver for driving the print head such that the print mask can be used in a variety of printing engine types.

Yen et al. further teaches the print mask extending in a first (horizontal or row) direction, wherein the first set of first solid black dots is spatially proximal to the second set of solid black dots in the first direction, the spatial frequency of the first set of the solid black dots spatially clustered in the first triangle-like shape and the second set of the solid black dots spatially clustered in the second triangle-like shape being greater than the spatial frequency of neighboring halftone pixels (Fig.6), the mask extending in the first (horizontal or row) and second (vertical or column) directions, wherein the first and second triangle-like shapes include a base and a peak, the base being oriented in the first direction, and the base of the first triangle-like shape being spatially proximal to the peak of the second triangle-like in the second direction, the peaks being unaligned in the second direction (Fig. 6), the set of open dots being spatially clustered in a third trianglelike shape, and wherein the first and second triangle-like shapes having a first orientation and the third triangle-like shape having an orientation that is inverted relative to the first orientation, the boundary between the set of the open dots and the first and second sets of solid black dots being an irregular zigzag, and the mask being stored in a computerreadable data file.

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Yen et al. also teaches the inkjet printer printing a varied breath of swath as a function of image data and the mask during printing (the printed dots as a function of the mask form triangular shaped patterns bordering with triangular shaped patterns of the non-printed dots such that the printed swath has varying breath).

## **Contact Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C Pham whose telephone number is (703) 308-1281. The examiner can normally be reached on T-F (8:30-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin R. Fuller can be reached on (703) 308-0079. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722, (703) 308-7724, (703) 308-7382, (703) 305-3431, (703) 305-3432 for regular communications and for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

HAI PHAM PRIMARY EXAMINER

Hairli Phan

May 28, 2003